NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

SURATHKAL, MANGALORE - 575 025

Course Code – CS254

Course Name – Database Systems Lab

Lab - 01

Date – January 27, 2022

Submitted To

Dr. Annappa B

Department of Computer Science and Engineering

National Institute of Technology Karnataka, Surathkal

Submitted By

Md Rakib Hasan

Roll – 201CS132

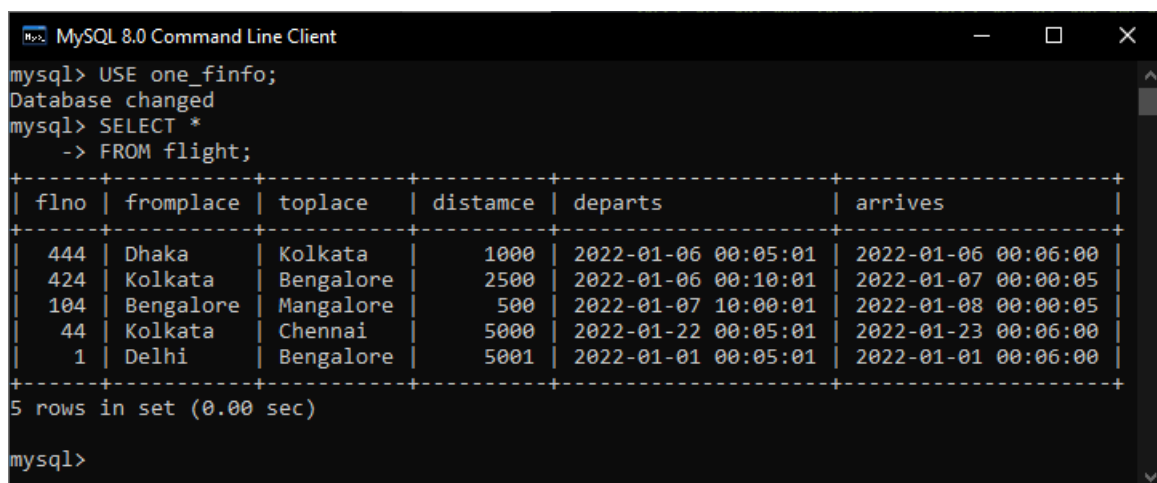Department of Computer Science and Engineering

1. Write SQL statements for:

Create a table flights with the following information:

FLIGHT(flno, fromplace, toplace, distance, departs, arrives)

a. Inserting data into the flight with five entries.

```sql
USE one_finfo;
CREATE TABLE flight (
    flno INT(5),
    fromplace VARCHAR(50),
    toplace VARCHAR(50),
    distamce INT(5),
    departs DATETIME,
    arrives DATETIME);
INSERT INTO flight
    VALUES (444, 'Dhaka', 'Kolkata', 1000,
    '2022:01:06 00:05:01', '2022:01:06 00:06:00'),
    (424, 'Kolkata', 'Bengalore', 2500,
    '2022:01:06 00:10:01', '2022:01:07 00:00:05'),
    (104, 'Bengalore', 'Mangalore', 500,
    '2022:01:07 10:00:01', '2022:01:08 00:00:05'),
    (044, 'Kolkata', 'Chennai', 5000,
    '2022:01:22 00:05:01', '2022:01:23 00:06:00'),
    (001, 'Delhi', 'Bengalore', 5001,
    '2022:01:01 00:05:01', '2022:01:01 00:06:00');
```
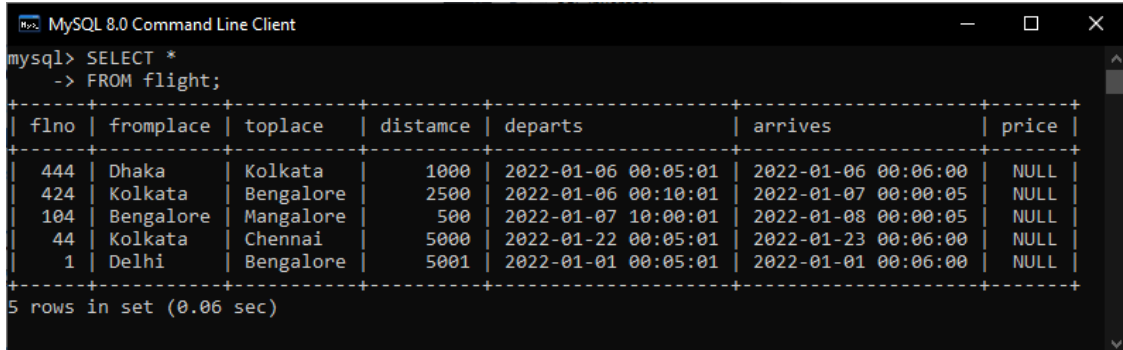
```
MySQL 8.0 Command Line Client                                                    —   □   ×
mysql> USE one_finfo;
Database changed
mysql> SELECT *
    -> FROM flight;
+------+-----------+-----------+---------+---------------------+---------------------+
| flno | fromplace | toplace   | distamce | departs            | arrives             |
+------+-----------+-----------+---------+---------------------+---------------------+
|  444 | Dhaka     | Kolkata   |    1000 | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 |
|  424 | Kolkata   | Bengalore |    2500 | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 |
|  104 | Bengalore | Mangalore |     500 | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 |
|   44 | Kolkata   | Chennai   |    5000 | 2022-01-22 00:05:01 | 2022-01-23 00:06:00 |
|    1 | Delhi     | Bengalore |    5001 | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 |
+------+-----------+-----------+---------+---------------------+---------------------+
5 rows in set (0.00 sec)

mysql>
```

b. Altering table by adding new column price.

```
ALTER TABLE flight
    ADD price INT(5);
```
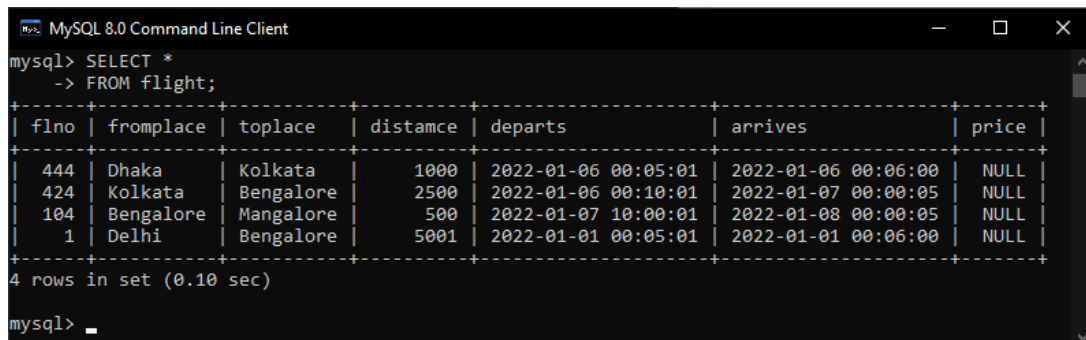


```
MySQL 8.0 Command Line Client                                          —    □    ×
mysql> SELECT *
    -> FROM flight;
+------+-----------+-----------+----------+---------------------+---------------------+-------+
| flno | fromplace | toplace   | distamce | departs             | arrives             | price |
+------+-----------+-----------+----------+---------------------+---------------------+-------+
|  444 | Dhaka     | Kolkata   |     1000 | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 |  NULL |
|  424 | Kolkata   | Bengalore |     2500 | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 |  NULL |
|  104 | Bengalore | Mangalore |      500 | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 |  NULL |
|   44 | Kolkata   | Chennai   |     5000 | 2022-01-22 00:05:01 | 2022-01-23 00:06:00 |  NULL |
|    1 | Delhi     | Bengalore |     5001 | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 |  NULL |
+------+-----------+-----------+----------+---------------------+---------------------+-------+
5 rows in set (0.06 sec)
```

c. Deleting a row from the table.

```
DELETE FROM flight
    WHERE flno = 44
```



```
MySQL 8.0 Command Line Client                                          —    □    ×
mysql> SELECT *
    -> FROM flight;
+------+-----------+-----------+----------+---------------------+---------------------+-------+
| flno | fromplace | toplace   | distamce | departs             | arrives             | price |
+------+-----------+-----------+----------+---------------------+---------------------+-------+
|  444 | Dhaka     | Kolkata   |     1000 | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 |  NULL |
|  424 | Kolkata   | Bengalore |     2500 | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 |  NULL |
|  104 | Bengalore | Mangalore |      500 | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 |  NULL |
|    1 | Delhi     | Bengalore |     5001 | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 |  NULL |
+------+-----------+-----------+----------+---------------------+---------------------+-------+
4 rows in set (0.10 sec)

mysql>
```
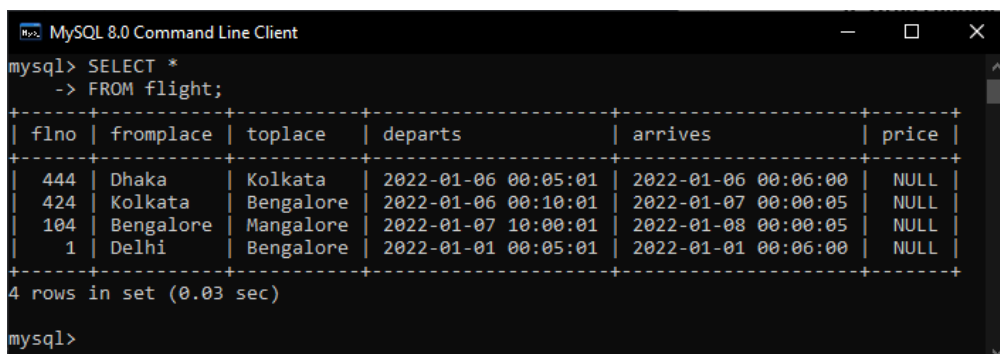
d. Drop column distance.

```
ALTER TABLE flight
    DROP COLUMN distamce;
```



```
MySQL 8.0 Command Line Client                                          —    □    ×
mysql> SELECT *
    -> FROM flight;
+------+-----------+-----------+---------------------+---------------------+-------+
| flno | fromplace | toplace   | departs             | arrives             | price |
+------+-----------+-----------+---------------------+---------------------+-------+
|  444 | Dhaka     | Kolkata   | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 |  NULL |
|  424 | Kolkata   | Bengalore | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 |  NULL |
|  104 | Bengalore | Mangalore | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 |  NULL |
|    1 | Delhi     | Bengalore | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 |  NULL |
+------+-----------+-----------+---------------------+---------------------+-------+
4 rows in set (0.03 sec)

mysql>
```
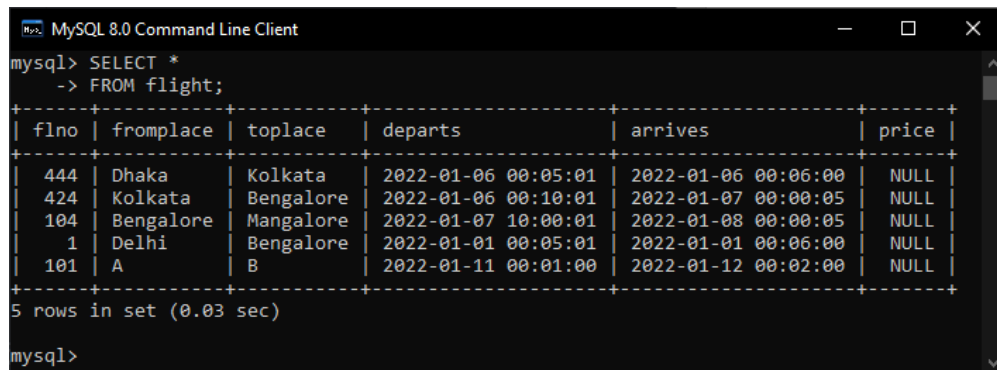
e. Enter any one row with a price value accepting the NULL value then update it to a particular price.

```sql
INSERT INTO flight(flno, fromplace, toplace,
    departs, arrives)
VALUES (101, 'A', 'B',
    '2022:01:11 00:01:00', '2022:01:12 00:02:00');
```
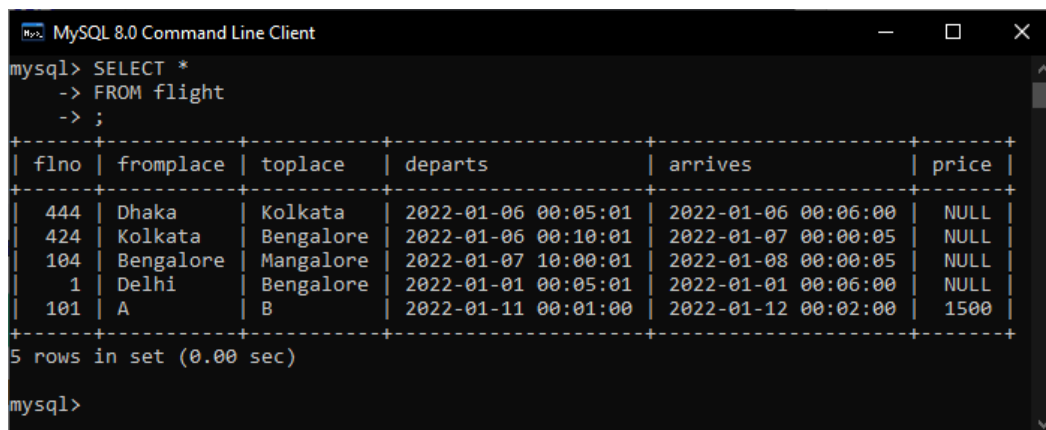
```
MySQL 8.0 Command Line Client                                            —    □    ×

mysql> SELECT *
    -> FROM flight;
+------+-----------+-----------+---------------------+---------------------+-------+
| flno | fromplace | toplace   | departs             | arrives             | price |
+------+-----------+-----------+---------------------+---------------------+-------+
|  444 | Dhaka     | Kolkata   | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 | NULL  |
|  424 | Kolkata   | Bengalore | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 | NULL  |
|  104 | Bengalore | Mangalore | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 | NULL  |
|    1 | Delhi     | Bengalore | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 | NULL  |
|  101 | A         | B         | 2022-01-11 00:01:00 | 2022-01-12 00:02:00 | NULL  |
+------+-----------+-----------+---------------------+---------------------+-------+
5 rows in set (0.03 sec)

mysql>
```

```sql
UPDATE flight
SET price = 1500
WHERE flno = 101
```

```
MySQL 8.0 Command Line Client                                            —    □    ×

mysql> SELECT *
    -> FROM flight
    -> ;
+------+-----------+-----------+---------------------+---------------------+-------+
| flno | fromplace | toplace   | departs             | arrives             | price |
+------+-----------+-----------+---------------------+---------------------+-------+
|  444 | Dhaka     | Kolkata   | 2022-01-06 00:05:01 | 2022-01-06 00:06:00 | NULL  |
|  424 | Kolkata   | Bengalore | 2022-01-06 00:10:01 | 2022-01-07 00:00:05 | NULL  |
|  104 | Bengalore | Mangalore | 2022-01-07 10:00:01 | 2022-01-08 00:00:05 | NULL  |
|    1 | Delhi     | Bengalore | 2022-01-01 00:05:01 | 2022-01-01 00:06:00 | NULL  |
|  101 | A         | B         | 2022-01-11 00:01:00 | 2022-01-12 00:02:00 | 1500  |
+------+-----------+-----------+---------------------+---------------------+-------+
5 rows in set (0.00 sec)

mysql>
```

f. Delete all the data from the table.

```sql
DELETE FROM flight;
```
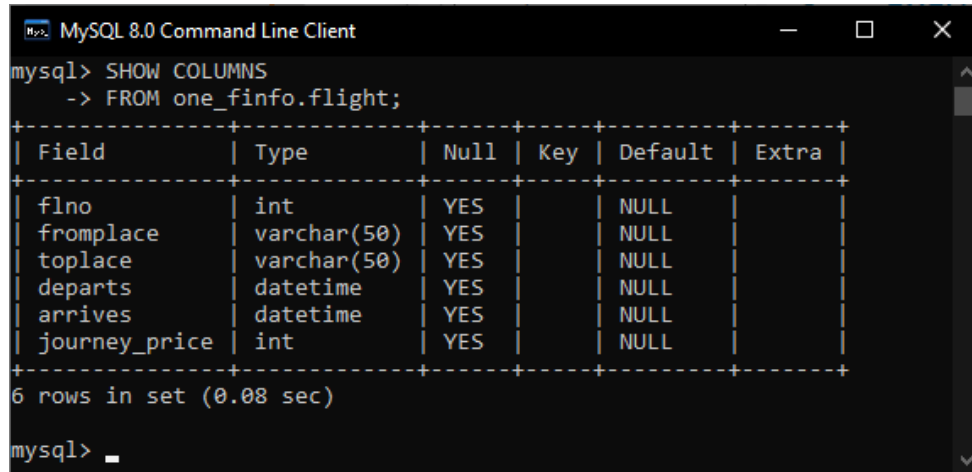
```
MySQL 8.0 Command Line Client                                            —    □    ×

mysql> SELECT *
    -> FROM flight;
Empty set (0.06 sec)

mysql>
```

g. Rename a column price to journey_price.

```
ALTER TABLE flight
RENAME COLUMN price TO journey_price;
```

```
MySQL 8.0 Command Line Client                                — □   ✕

mysql> SHOW COLUMNS
    -> FROM one_finfo.flight;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| flno          | int         | YES  |     | NULL    |       |
| fromplace     | varchar(50) | YES  |     | NULL    |       |
| toplace       | varchar(50) | YES  |     | NULL    |       |
| departs       | datetime    | YES  |     | NULL    |       |
| arrives       | datetime    | YES  |     | NULL    |       |
| journey_price | int         | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
6 rows in set (0.08 sec)

mysql>
```

2. Consider the following schema for a Library Database.

BOOK (Book_id, Title, Publisher_name, Pub_year)
BOOK_AUTHORS (Book_id, Author_name)
PUBLISHER (Book_id, Name, Address, Phone)

```
CREATE DATABASE IF NOT EXISTS one_library;
USE one_library;
CREATE TABLE book (
    book_id INT NOT NULL ,
    title VARCHAR(50),
    publisher_name VARCHAR(50),
    pub_year DATE,
    PRIMARY KEY (book_id));
CREATE TABLE book_authors (
    book_id INT,
    author_name VARCHAR(50),
    FOREIGN KEY (book_id) REFERENCES book(book_id));
CREATE TABLE publisher (
    book_id INT,
    name  VARCHAR(50),
    address VARCHAR(100),
```

```
    phone INT,
    FOREIGN KEY (book_id) REFERENCES book(book_id));
```


a. Enter at least five tuples for the given relation.

```
INSERT INTO book
    VALUES (100, 'Book One', 'Publisher one', '2012-01-01'),
    (101, 'Book Two', 'Publisher Two', '2015-01-01'),
    (102, 'Book Three', 'Publisher Three', '2009-01-01'),
    (103, 'Book Four', 'Publisher Four', '2011-01-01'),
    (104, 'Book Five', 'Publisher Five', '2010-01-01');
INSERT INTO book_authors
    VALUES (101, 'Author A'),
    (102, 'Author B'),
    (103, 'Author C'),
    (104, 'Author D'),
    (100, 'Author E');
INSERT INTO publisher
    VALUES (100, 'P one', 'Address one', 123456789),
        (101, 'P two', 'Address two', 123456799),
        (102, 'P three', 'Address three', 123056789),
        (103, 'P four', 'Address four', 123451789),
        (104, 'P five', 'Address five', 123454789);
```

b. Retrieve details of all books in the library – id, title, name of the publisher, author, etc.

```sql
USE one_library;
SELECT *
FROM book
JOIN book_authors
    USING (book_id)
JOIN publisher
    USING (book_id);
```
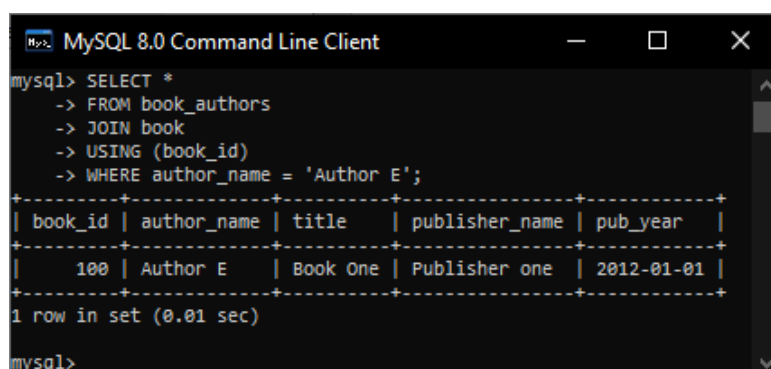
```
Select MySQL 8.0 Command Line Client                                          —    □    ×

mysql> USE one_library
Database changed
mysql> SELECT *
    -> FROM book
    -> JOIN book_authors USING (book_id)
    -> JOIN publisher USING (book_id);
+---------+------------+-----------------+------------+-------------+---------+---------------+-----------+
| book_id | title      | publisher_name  | pub_year   | author_name | name    | address       | phone     |
+---------+------------+-----------------+------------+-------------+---------+---------------+-----------+
|     100 | Book One   | Publisher one   | 2012-01-01 | Author E    | P one   | Address one   | 123456789 |
|     101 | Book Two   | Publisher Two   | 2015-01-01 | Author A    | P two   | Address two   | 123456799 |
|     102 | Book Three | Publisher Three | 2009-01-01 | Author B    | P three | Address three | 123056789 |
|     103 | Book Four  | Publisher Four  | 2011-01-01 | Author C    | P four  | Address four  | 123451789 |
|     104 | Book Five  | Publisher Five  | 2010-01-01 | Author D    | P five  | Address five  | 123454789 |
+---------+------------+-----------------+------------+-------------+---------+---------------+-----------+
5 rows in set (0.03 sec)

mysql>
```

c. Get the books written by a particular author.

```sql
SELECT *
FROM book_authors
JOIN book
    USING (book_id)
WHERE author_name = 'Author E';
```
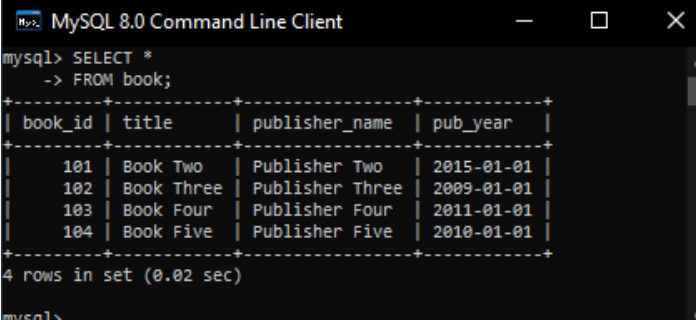
```
MySQL 8.0 Command Line Client                    —    □    ×

mysql> SELECT *
    -> FROM book_authors
    -> JOIN book
    -> USING (book_id)
    -> WHERE author_name = 'Author E';
+---------+-------------+----------+-----------------+------------+
| book_id | author_name | title    | publisher_name  | pub_year   |
+---------+-------------+----------+-----------------+------------+
|     100 | Author E    | Book One | Publisher one   | 2012-01-01 |
+---------+-------------+----------+-----------------+------------+
1 row in set (0.01 sec)

mysql>
```

d. Delete a book from the book table.

```sql
DELETE FROM book
WHERE book_id = 100
```
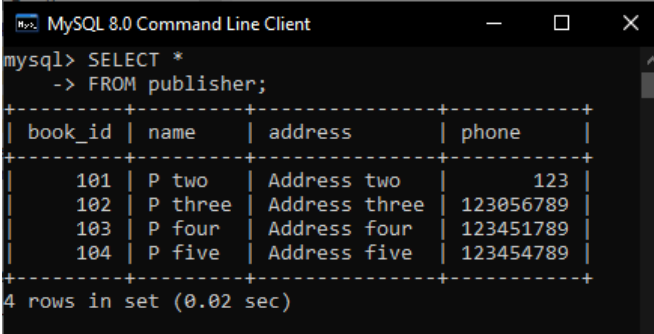
```
mysql> SELECT *
    -> FROM book;
+---------+------------+----------------+------------+
| book_id | title      | publisher_name | pub_year   |
+---------+------------+----------------+------------+
|     101 | Book Two   | Publisher Two  | 2015-01-01 |
|     102 | Book Three | Publisher Three| 2009-01-01 |
|     103 | Book Four  | Publisher Four | 2011-01-01 |
|     104 | Book Five  | Publisher Five | 2010-01-01 |
+---------+------------+----------------+------------+
4 rows in set (0.02 sec)

mysql>
```

e. Update the phone number of a publisher.

```sql
UPDATE publisher
SET phone = 123
WHERE book_id = 101
```
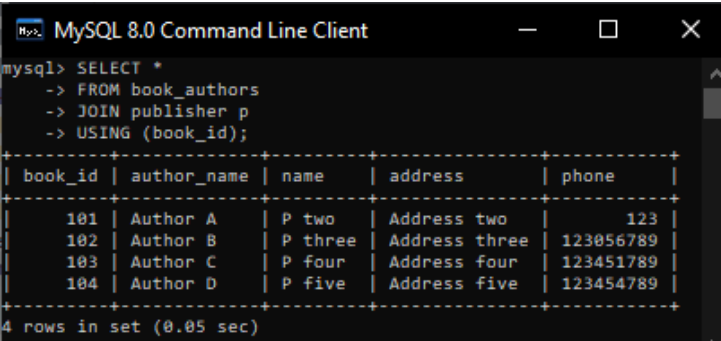
```
mysql> SELECT *
    -> FROM publisher;
+---------+---------+---------------+-----------+
| book_id | name    | address       | phone     |
+---------+---------+---------------+-----------+
|     101 | P two   | Address two   |       123 |
|     102 | P three | Address three | 123056789 |
|     103 | P four  | Address four  | 123451789 |
|     104 | P five  | Address five  | 123454789 |
+---------+---------+---------------+-----------+
4 rows in set (0.02 sec)
```

f. Through book_id retrieve the details of author name and publisher details.

```sql
SELECT *
FROM book_authors
JOIN publisher p
    USING (book_id)
```
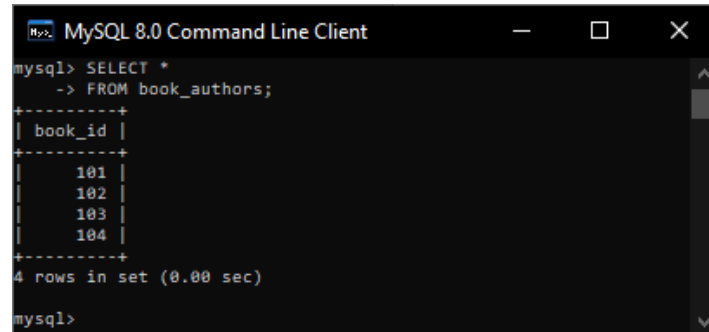
```
mysql> SELECT *
    -> FROM book_authors
    -> JOIN publisher p
    -> USING (book_id);
+---------+-------------+---------+---------------+-----------+
| book_id | author_name | name    | address       | phone     |
+---------+-------------+---------+---------------+-----------+
|     101 | Author A    | P two   | Address two   |       123 |
|     102 | Author B    | P three | Address three | 123056789 |
|     103 | Author C    | P four  | Address four  | 123451789 |
|     104 | Author D    | P five  | Address five  | 123454789 |
+---------+-------------+---------+---------------+-----------+
4 rows in set (0.05 sec)
```

g. Drop author_name column from Book_authors.

```
ALTER TABLE book_authors
DROP COLUMN author_name
```
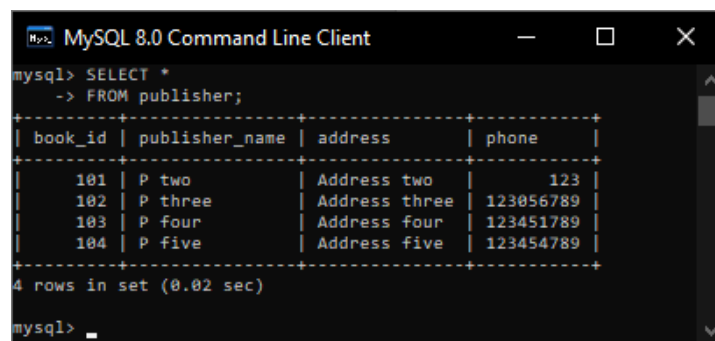

h. Rename Name (from publisher) to Publisher_name.

```
ALTER TABLE publisher
RENAME COLUMN name TO publisher_name
```


3. Consider the following schema for OrderDatabase:
      SALESMAN (Salesman_id, Name, City, Salary)
      CUSTOMER (Customer_id, cust_Name, City, Salesman_id)
      ORDERS (Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)
Write SQL queries to –
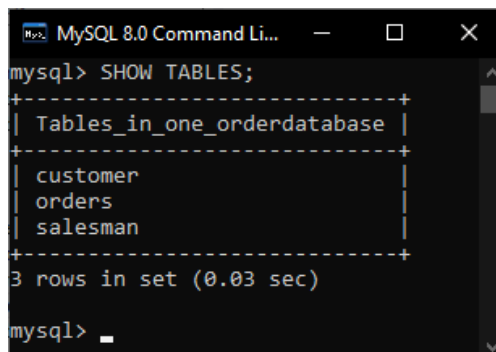
```
CREATE DATABASE one_orderdatabase;
USE one_orderdatabase;
CREATE TABLE salesman (
    salesman_id INT NOT NULL,
    name VARCHAR(50),
    city VARCHAR(100),
    salary INT,
```

```sql
    PRIMARY KEY (salesman_id));
CREATE TABLE customer (
    customer_id INT NOT NULL,
    cust_name VARCHAR(50),
    city VARCHAR(50),
    salesman_id INT NOT NULL,
    PRIMARY KEY (customer_id),
    FOREIGN KEY (salesman_id) REFERENCES
    salesman(salesman_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE);
CREATE TABLE orders (
    ord_no INT NOT NULL,
    purchase_amt INT,
    ord_date DATE,
    customer_id INT NOT NULL,
    salesman_id INT NOT NULL,
    PRIMARY KEY (ord_no),
    FOREIGN KEY (customer_id) REFERENCES
    customer(customer_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
    FOREIGN KEY (salesman_id) REFERENCES
    salesman(salesman_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE);
```

```
mysql> SHOW TABLES;
+----------------------------+
| Tables_in_one_orderdatabase |
+----------------------------+
| customer                   |
| orders                     |
| salesman                   |
+----------------------------+
3 rows in set (0.03 sec)

mysql>
```
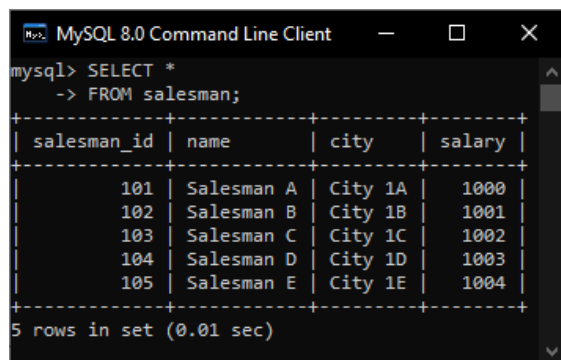
a. Insert 5-10 entries.

```sql
INSERT INTO salesman
    VALUES (101, 'Salesman A', 'City 1A', 1000),
    (102, 'Salesman B', 'City 1B', 1001),
    (103, 'Salesman C', 'City 1C', 1002),
    (104, 'Salesman D', 'City 1D', 1003),
    (105, 'Salesman E', 'City 1E', 1004);
INSERT INTO customer
    VALUES (201, 'Customer A', 'City 2A', 101),
    (202, 'Customer B', 'City 2B', 102),
    (203, 'Customer C', 'City 2C', 103),
    (204, 'Customer D', 'City 2D', 104),
    (205, 'Customer E', 'City 2E', 105);
INSERT INTO orders
    VALUES (301, 123, '2022-01-02', 201, 101),
    (302, 124, '2022-01-03', 202, 102),
    (303, 125, '2022-01-04', 203, 103),
    (304, 126, '2022-01-05', 204, 104),
    (305, 127, '2022-01-06', 205, 105);
```
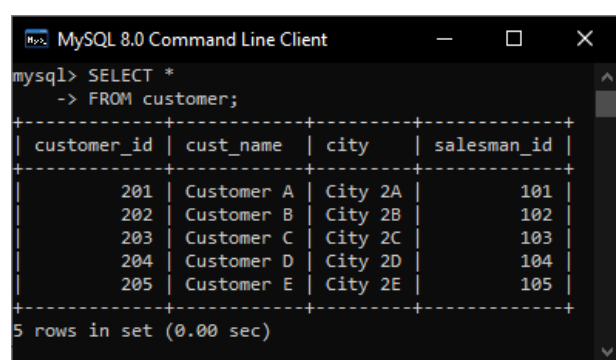
```
mysql> SELECT *
    -> FROM salesman;
+-------------+-------------+---------+--------+
| salesman_id | name        | city    | salary |
+-------------+-------------+---------+--------+
|         101 | Salesman A  | City 1A |   1000 |
|         102 | Salesman B  | City 1B |   1001 |
|         103 | Salesman C  | City 1C |   1002 |
|         104 | Salesman D  | City 1D |   1003 |
|         105 | Salesman E  | City 1E |   1004 |
+-------------+-------------+---------+--------+
5 rows in set (0.01 sec)
```
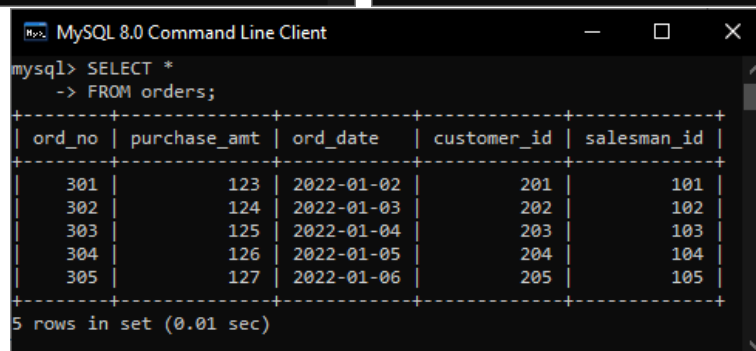
```
mysql> SELECT *
    -> FROM customer;
+-------------+------------+---------+-------------+
| customer_id | cust_name  | city    | salesman_id |
+-------------+------------+---------+-------------+
|         201 | Customer A | City 2A |         101 |
|         202 | Customer B | City 2B |         102 |
|         203 | Customer C | City 2C |         103 |
|         204 | Customer D | City 2D |         104 |
|         205 | Customer E | City 2E |         105 |
+-------------+------------+---------+-------------+
5 rows in set (0.00 sec)
```
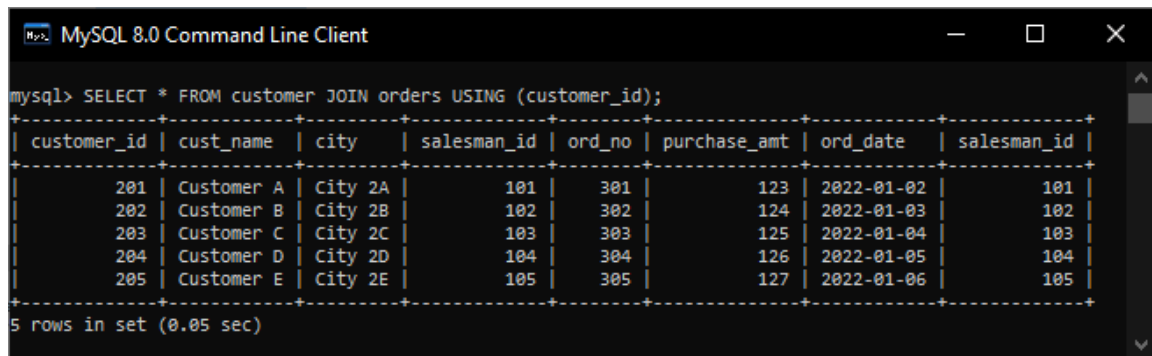
```
mysql> SELECT *
    -> FROM orders;
+--------+-------------+------------+-------------+-------------+
| ord_no | purchase_amt | ord_date  | customer_id | salesman_id |
+--------+-------------+------------+-------------+-------------+
|    301 |         123 | 2022-01-02 |         201 |         101 |
|    302 |         124 | 2022-01-03 |         202 |         102 |
|    303 |         125 | 2022-01-04 |         203 |         103 |
|    304 |         126 | 2022-01-05 |         204 |         104 |
|    305 |         127 | 2022-01-06 |         205 |         105 |
+--------+-------------+------------+-------------+-------------+
5 rows in set (0.01 sec)
```

b. Retrieve the details of all the customers and orders.

```
SELECT *
FROM customer
JOIN orders
    USING (customer_id)
```


c. Get the customers handled by a particular salesman.

```
SELECT s.name,
    c.cust_name as customer
FROM salesman s
JOIN customer c
    USING (salesman_id)
WHERE salesman_id = 105
```


d. Get the details of orders purchased by customers.

```
SELECT c.cust_name,
    o.purchase_amt AS price,
    o.ord_date AS date
FROM customer c
```

```
JOIN orders o
    USING (customer_id)
WHERE cust_name = 'Customer C'
```


e. Through salesman_id retrieve the details of his sold orders.

```
SELECT s.name AS saller,
       c.cust_name AS customer,
       o.ord_no, o.ord_date,
       o.purchase_amt
FROM salesman s
JOIN orders o
    USING (salesman_id)
JOIN customer c
    USING (customer_id)
WHERE s.salesman_id = 103
```


f. One of the salesmen is getting a rise of 2000 and is getting relocated to Delhi. Update his data.

```
UPDATE salesman
SET salary = salary + 2000, city = 'Delhi'
```

```
WHERE salesman_id = 101
```


g. Delete an order and its details as the customer placed an order and canceled it.

```
DELETE
FROM orders
WHERE ord_no = 301
```


h. Rename the City column to Place.

```
ALTER TABLE customer
RENAME COLUMN city TO place;
ALTER TABLE salesman
RENAME COLUMN city TO place;
```
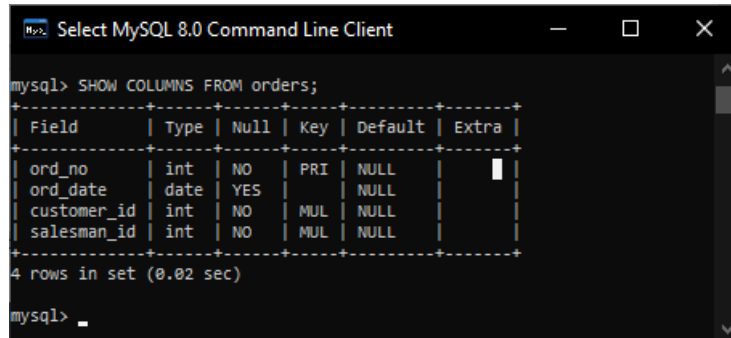
i. Drop purchase_amt column from the table orders.

```
ALTER TABLE orders
DROP COLUMN purchase_amt
```


j. Drop the table salesman.

```
SET FOREIGN_KEY_CHECKS = 0;
DROP TABLE salesman;
SET FOREIGN_KEY_CHECKS = 1;
```


4. Write SQL statements for the following.

Create a table sub with the following information: column and data types: name varchar(8), age number(5), mark1 number(4), mark2 number(4), mark3 number(4);

```
CREATE DATABASE one_uni;
USE one_uni;
CREATE TABLE sub (
    name VARCHAR(8),
    age INT NOT NULL,
    mark1 INT,
    mark2 INT,
```

```
      mark3 INT);
```


a. Enter at least five tuples for the given relation.

```
INSERT INTO sub
    VALUES ('Name A', 10, 1, 2, 3),
    ('Name B', 11, 2, 3, 1),
    ('Name C', 10, 2, 1, 3),
    ('Name D', 9, 3, 1, 2),
    ('Name E', 12, 3, 2, 1);
```


b. Add one more column with the field name as total with data type as number(5).
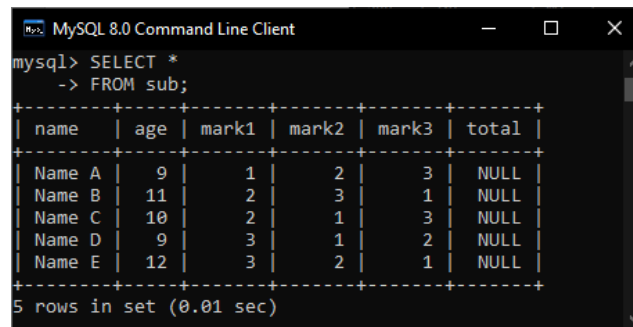
```
ALTER TABLE sub
ADD total INT;
```

c. Update the age of sub for a particular student.

```
UPDATE sub
SET age = 9
WHERE name = 'Name A'
```
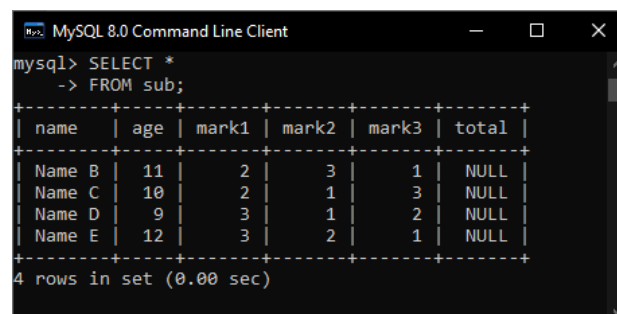

d. Delete a row from the table.

```
DELETE
FROM sub
WHERE name = 'Name A'
```
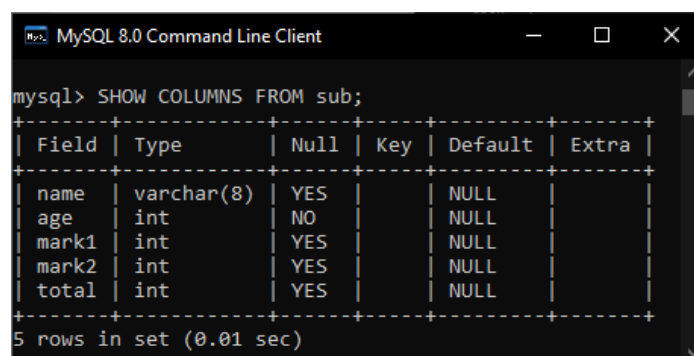

e. Drop column mark3.

```
ALTER TABLE sub
DROP COLUMN mark3
```
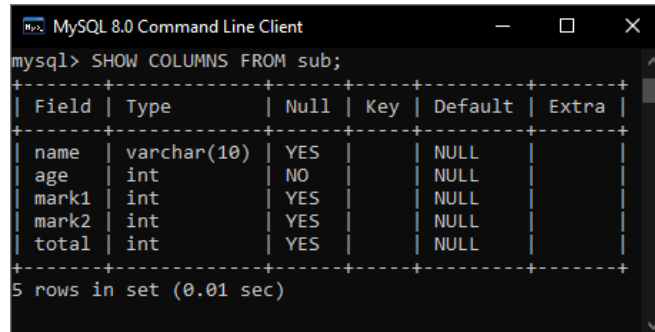
f. Modify the table by changing the data type of name to varchar(10).
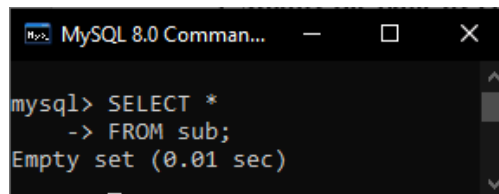
```
ALTER TABLE sub
MODIFY COLUMN name VARCHAR(10)
```


g. Delete all the data from the sub table.

```
DELETE FROM sub;
```
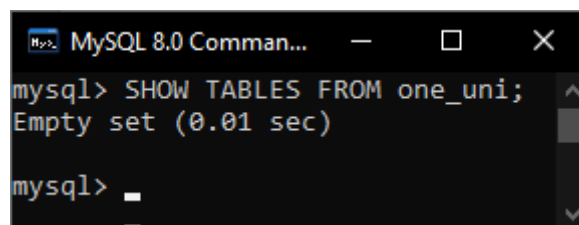

h. Delete the table.

```
DROP table sub
```